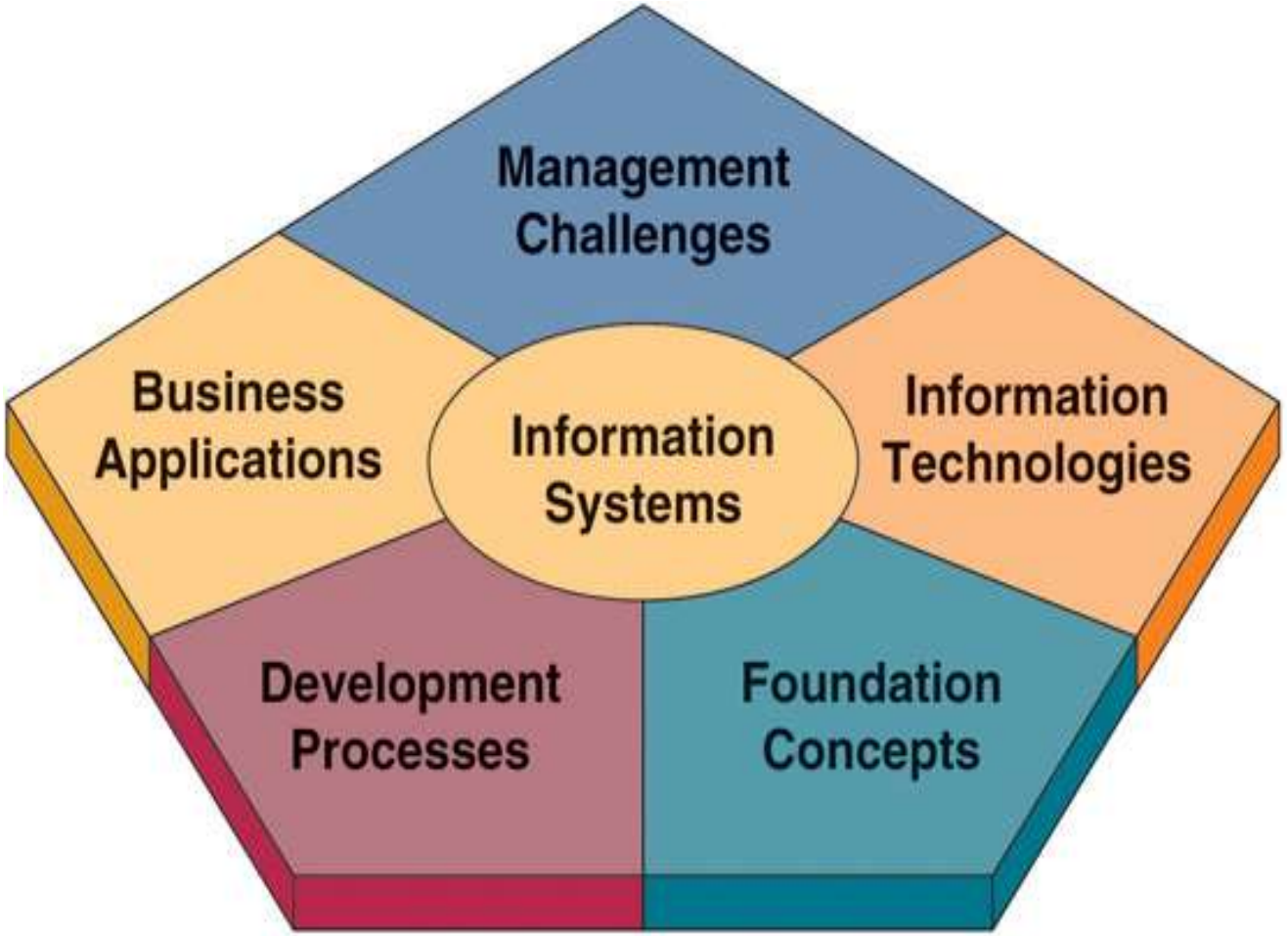
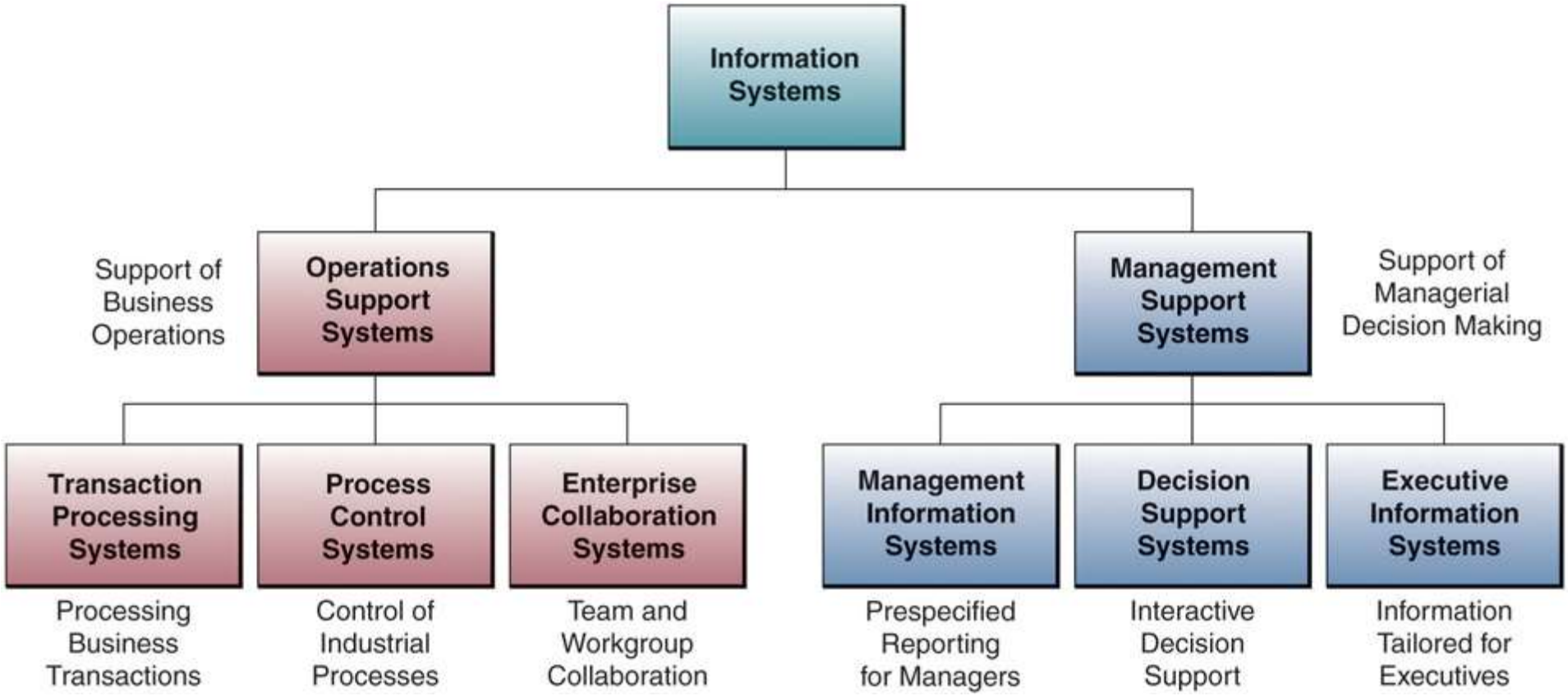
IS Framework for Business



Types of Information Systems



Transaction Processing Systems

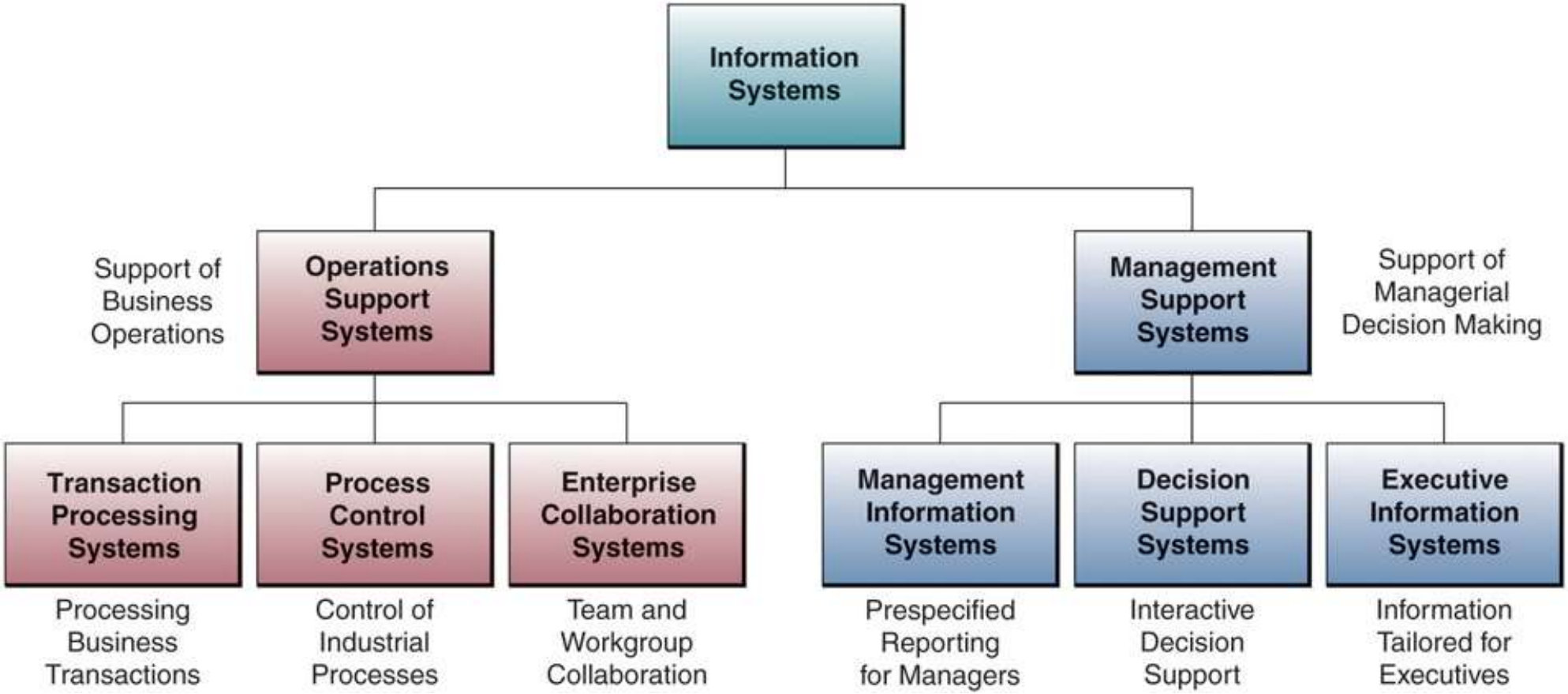
- Basic business systems that serve the organization's operational level
- Process and record an organization's transactions
  - A unit of business activity, such as purchasing a product, making a banking deposit, or reserving an airline seat

- Input: Transactions, events
- Processing: Sorting, listing, merging, updating
- Output: Detailed reports, lists, summaries
- Users: Operations personnel, supervisors

Typical applications of TPS

	TYPE OF TPS SYSTEM				
	Sales/ marketing systems	Manufacturing/ production systems	Finance/ accounting systems	Human resources systems	Other types (e.g., university)
Major functions of system	Customer service Sales management Promotion tracking Price changes Dealer communications	Scheduling Purchasing Shipping/receiving Operations	General ledger Billing Cost accounting	Personnel records Benefits Compensation Labor relations Training	Admissions Grade records Course records Alumni records
Major application systems	Sales order information system Sales commission system Sales support system	Machine control systems Purchase order systems Quality control systems	General ledger Payroll Accounts receivable/payable Funds management systems	Employee records Benefit systems Employee skills inventory	Registration system Student transcript system Curriculum class control systems Alumni benefactor system

Types of Information Systems



Management Support Systems

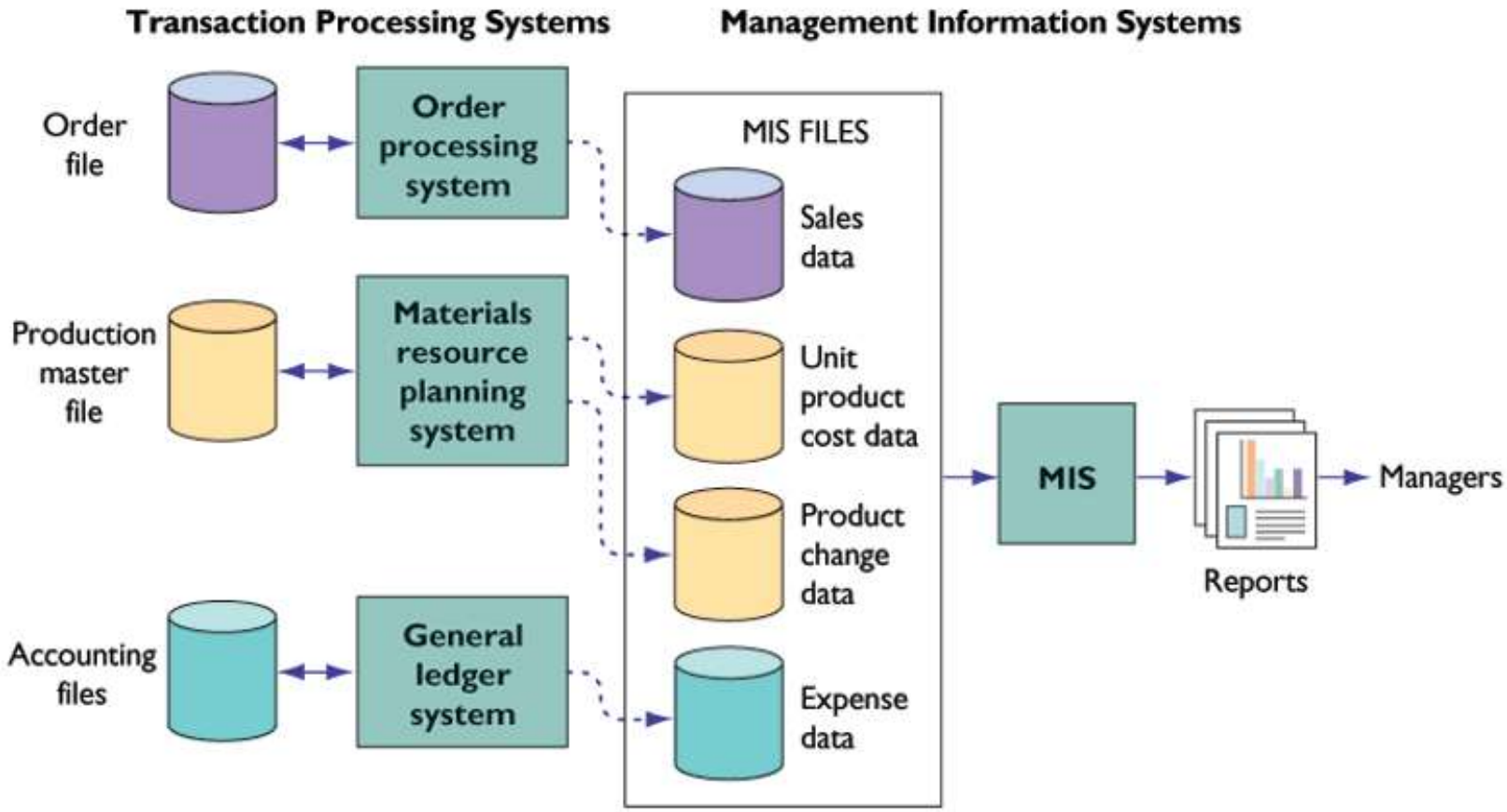
- Supply information that managers need to make effective decisions and coordinate their activities
  - Example
    - A human resources manager might use a management support system to evaluate the performance of an employee before deciding whether or not to give him a raise

Management Information Systems (MIS)

- Provide information in the form of pre-specified reports and displays to support business decision making.
- Serve management level; provide reports and access to company data
- Supply information that managers need to make decisions and coordinate their activities

- Input: Summary transaction data, high-volume data, simple models
- Processing: Routine reports, simple models, low-level analysis
- Output: Summary and exception reports
- Users: Middle managers

How management information systems obtain their data from the organization's TPS



A sample report that might be produced by the MIS

Consolidated Consumer Products Corporation
Sales by Product and Sales Region: 2004

PRODUCT CODE	PRODUCT DESCRIPTION	SALES REGION	ACTUAL SALES	PLANNED	ACTUAL VS. PLANNED
4469	Carpet Cleaner	Northeast	4,066,700	4,800,000	0.85
		South	3,778,112	3,750,000	1.01
		Midwest	4,867,001	4,600,000	1.06
		West	4,003,440	4,400,000	0.91
	TOTAL		16,715,253	17,550,000	0.95
5674	Room Freshener	Northeast	3,676,700	3,900,000	0.94
		South	5,608,112	4,700,000	1.19
		Midwest	4,711,001	4,200,000	1.12
		West	4,563,440	4,900,000	0.93
	TOTAL		18,559,253	17,700,000	1.05

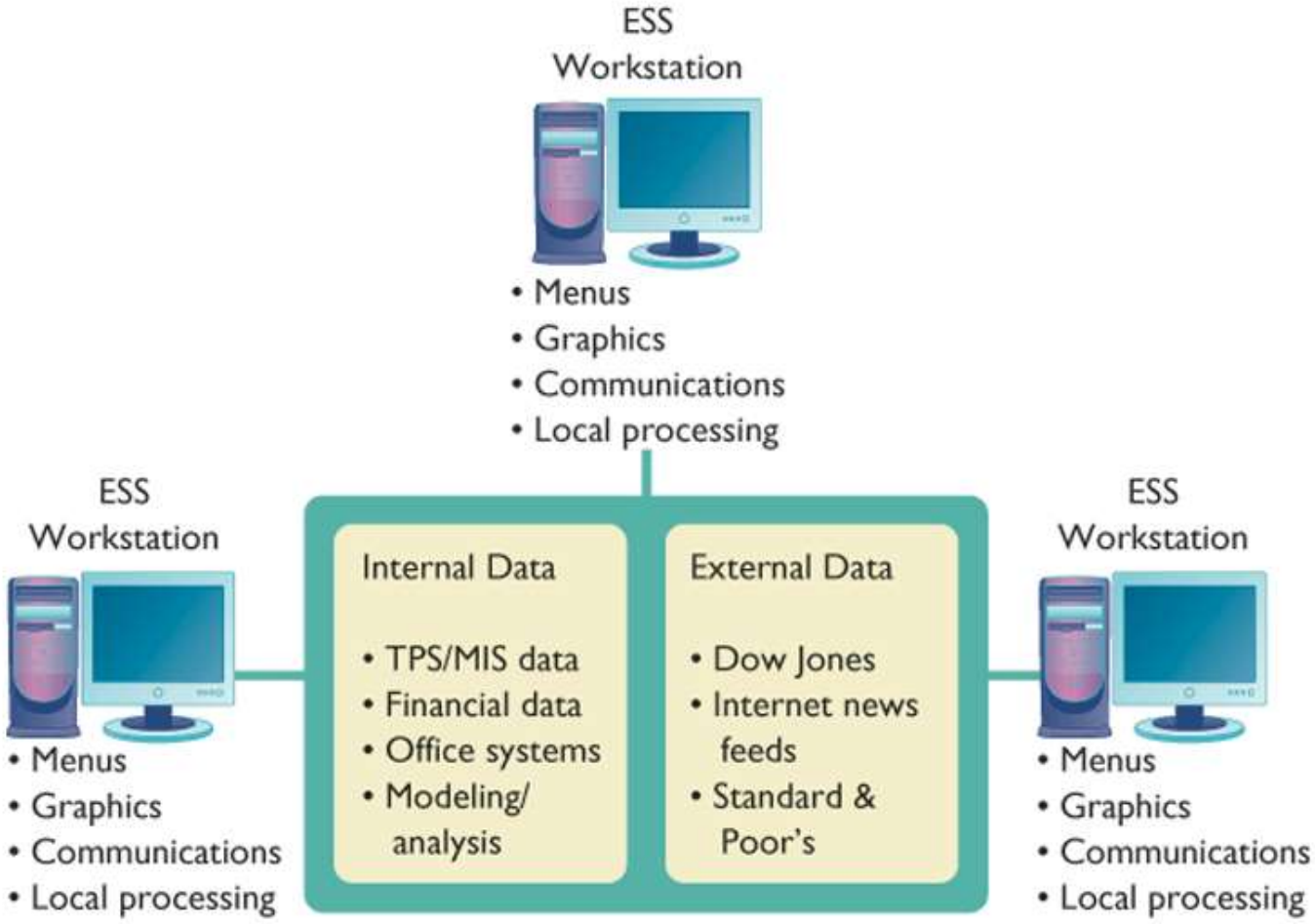
Decision-Support Systems (DSS)

- Provide interactive ad hoc support for the decision-making processes of managers and other business professionals.
- Serve management level with data analysis for making decisions
- Input: Low-volume data or massive databases, analytic models, and data analysis tools
- Processing: Interactive, simulations, analysis
- Output: Special reports, decision analyses, responses to queries
- Users: Professionals, staff managers

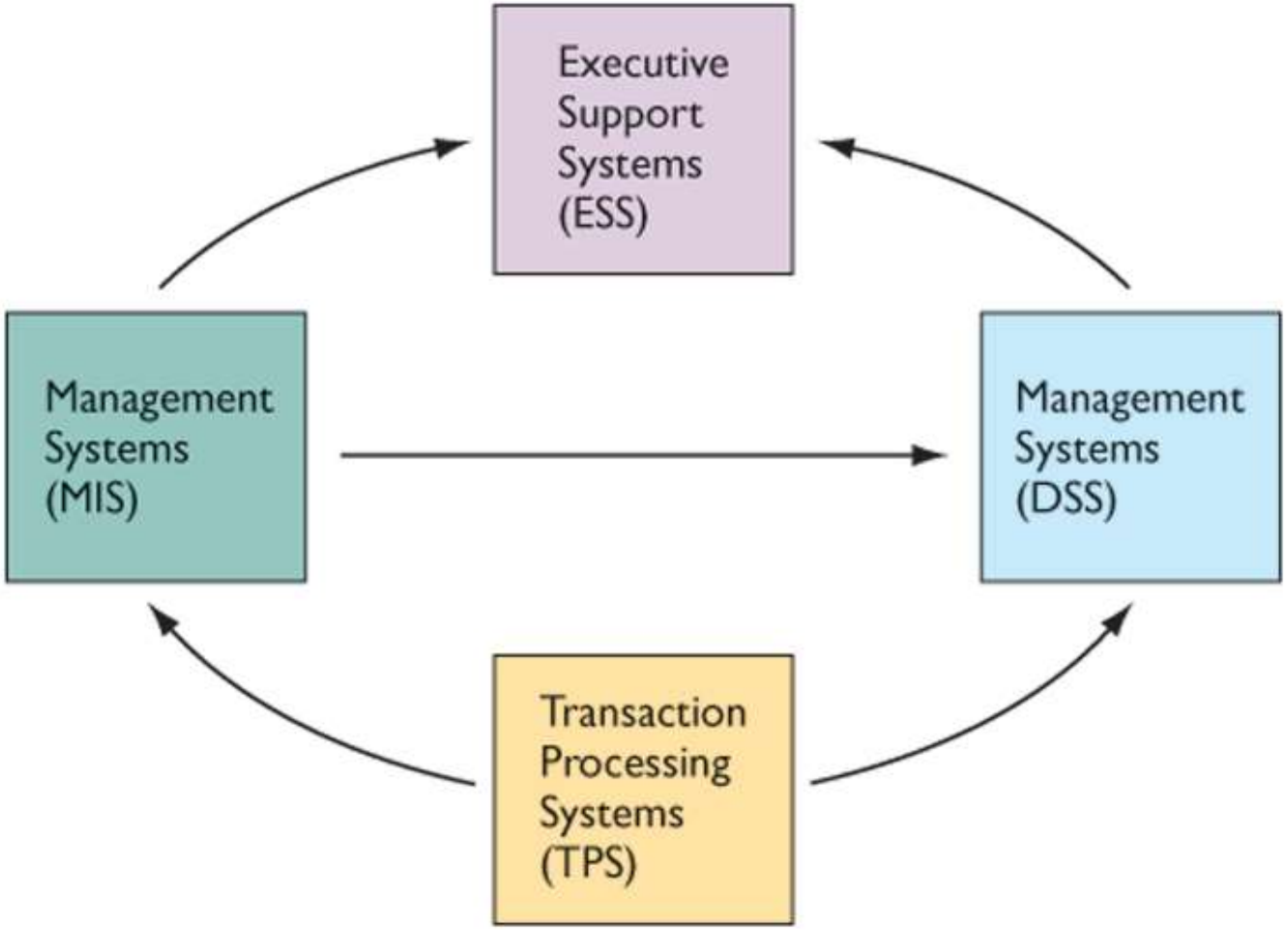
Executive Support Systems (ESS)

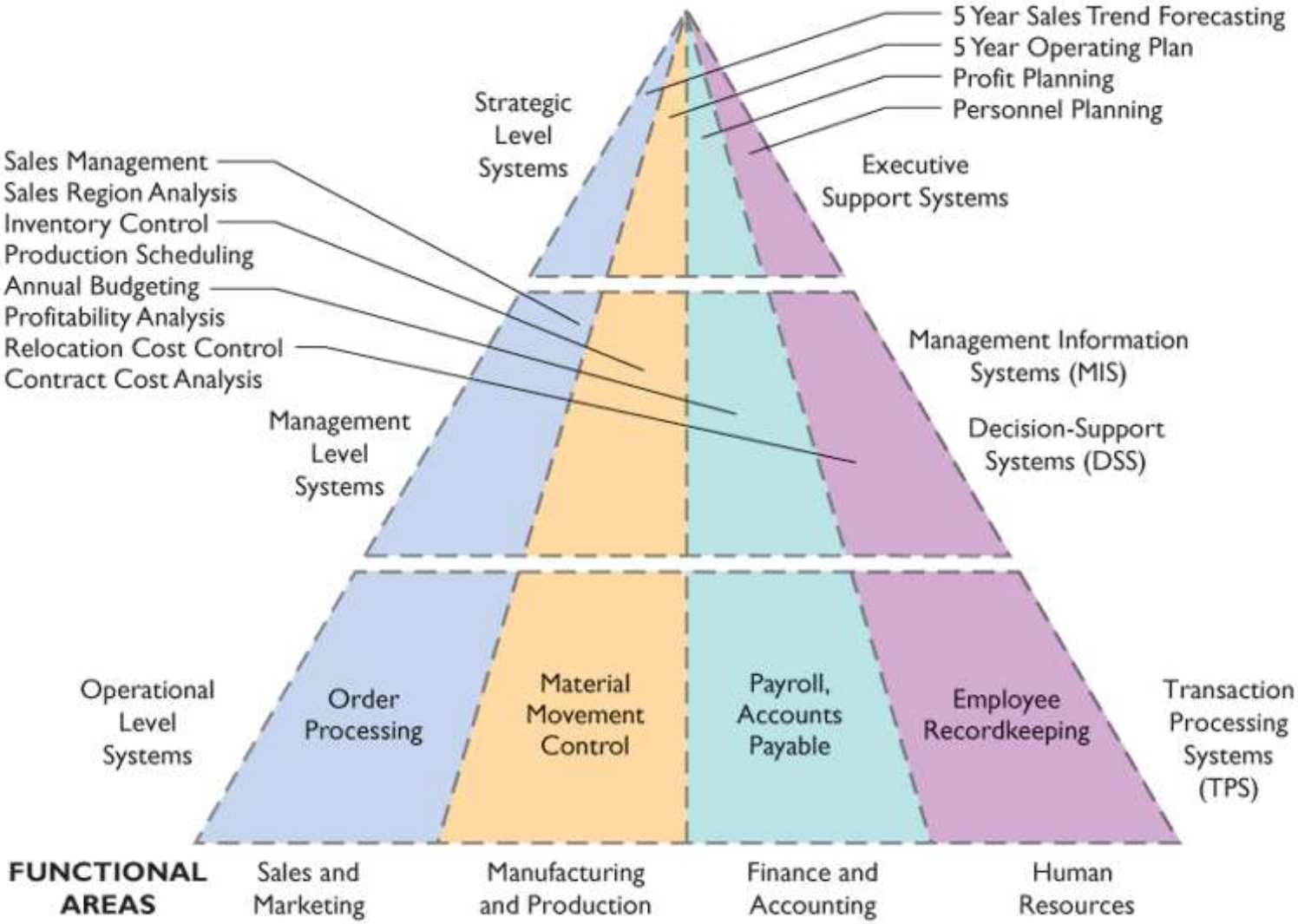
- Provide critical information from MIS, DSS, and other sources tailored to the information needs of executives.
- Provide the information that top executives need to quickly identify problems, scan data for trends, communicate with employees, and set strategic objectives
- Input: External and internal aggregate data
- Processing: Graphics, simulations, interactive
- Output: Projections, responses to queries
- Users: Senior Managers

Model of a typical executive support system



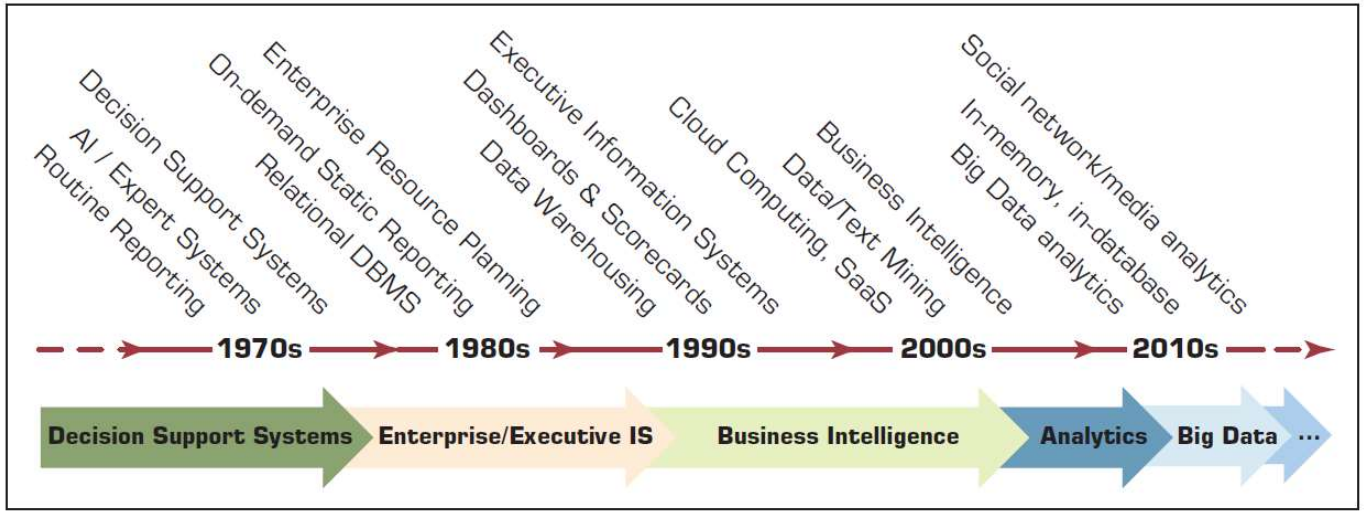
Interrelationships among systems




5 Year Sales Trend Forecasting
5 Year Operating Plan
Profit Planning
Personnel Planning
Strategic Level Systems
Executive Support Systems
Sales Management
Sales Region Analysis
Inventory Control
Production Scheduling
Annual Budgeting
Profitability Analysis
Relocation Cost Control
Contract Cost Analysis
Management Information Systems (MIS)
Management Level Systems
Decision-Support Systems (DSS)
Operational Level Systems
Order Processing
Material Movement Control
Payroll, Accounts Payable
Employee Recordkeeping
Transaction Processing Systems (TPS)
FUNCTIONAL AREAS
Sales and Marketing
Manufacturing and Production
Finance and Accounting
Human Resources

Evolution of Computerized Decision Support to Analytics/Data Science

Evolution of Decision Support, Business Intelligence, and Analytics



Examples of Sales and Marketing Information Systems

System	Description	Organizational Level
Order processing	Enter, process, and track orders	Operational
Pricing analysis	Determine prices for products and services	Management
Sales trend forecasting	Prepare 5-year sales forecasts	Strategic

Examples of Manufacturing and Production Information Systems

System	Description	Organizational Level
Machine control	Control the actions of machines and equipment	Operational
Production planning	Decide when and how many products should be produced	Management
Facilities location	Decide where to locate new facilities	Strategic

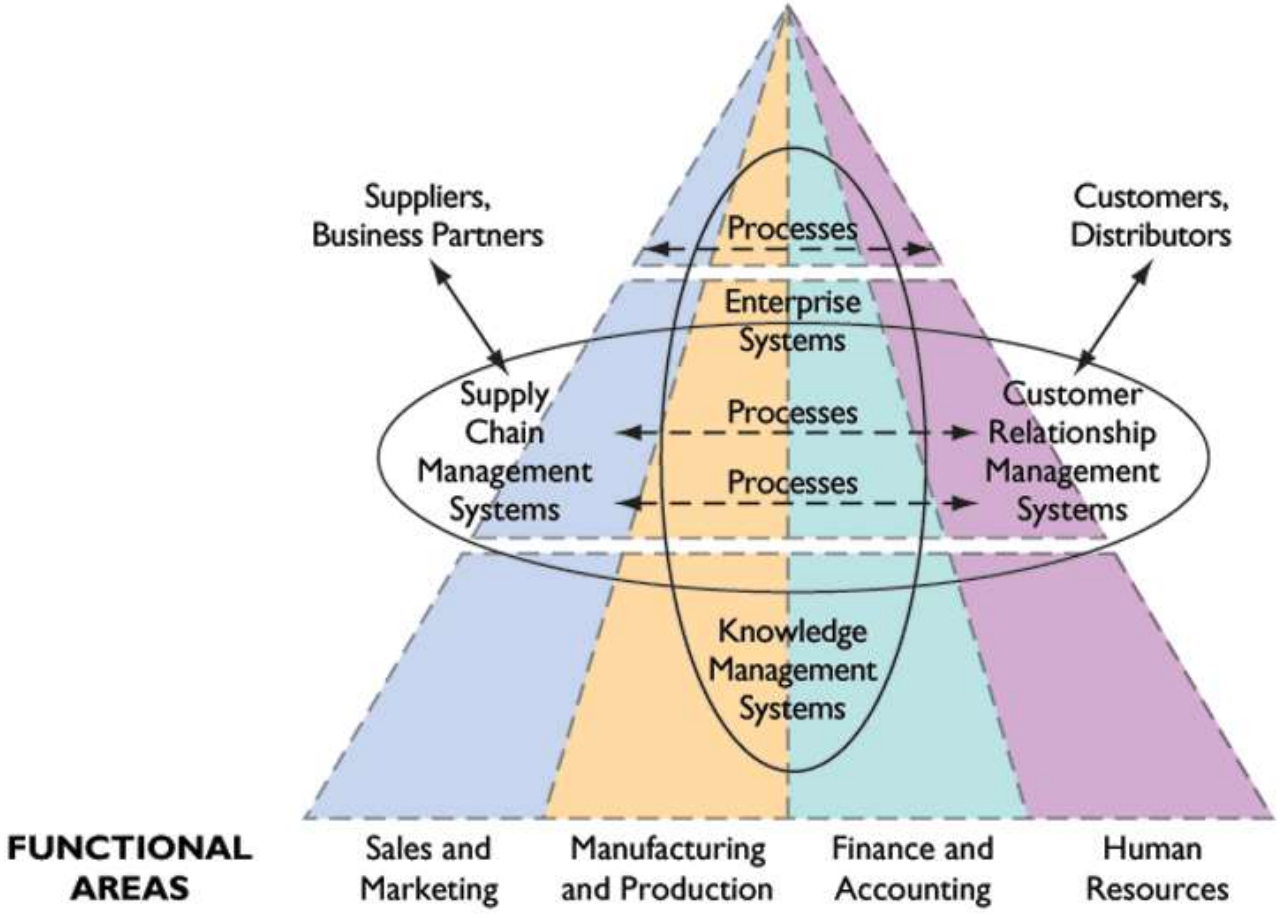
Examples of Finance and Accounting Information Systems

System	Description	Organizational Level
Accounts receivable	Track money owed the firm	Operational
Budgeting	Prepare short-term budgets	Management
Profit planning	Plan long-term profits	Strategic

Examples of Human Resources Information Systems

System	Description	Organizational Level
Training and development	Track employee training, skills, and performance	Operational
Compensation analysis	Monitor wages, salaries, benefits	Management
Human resources planning	Plan long-term labor force needs	Strategic

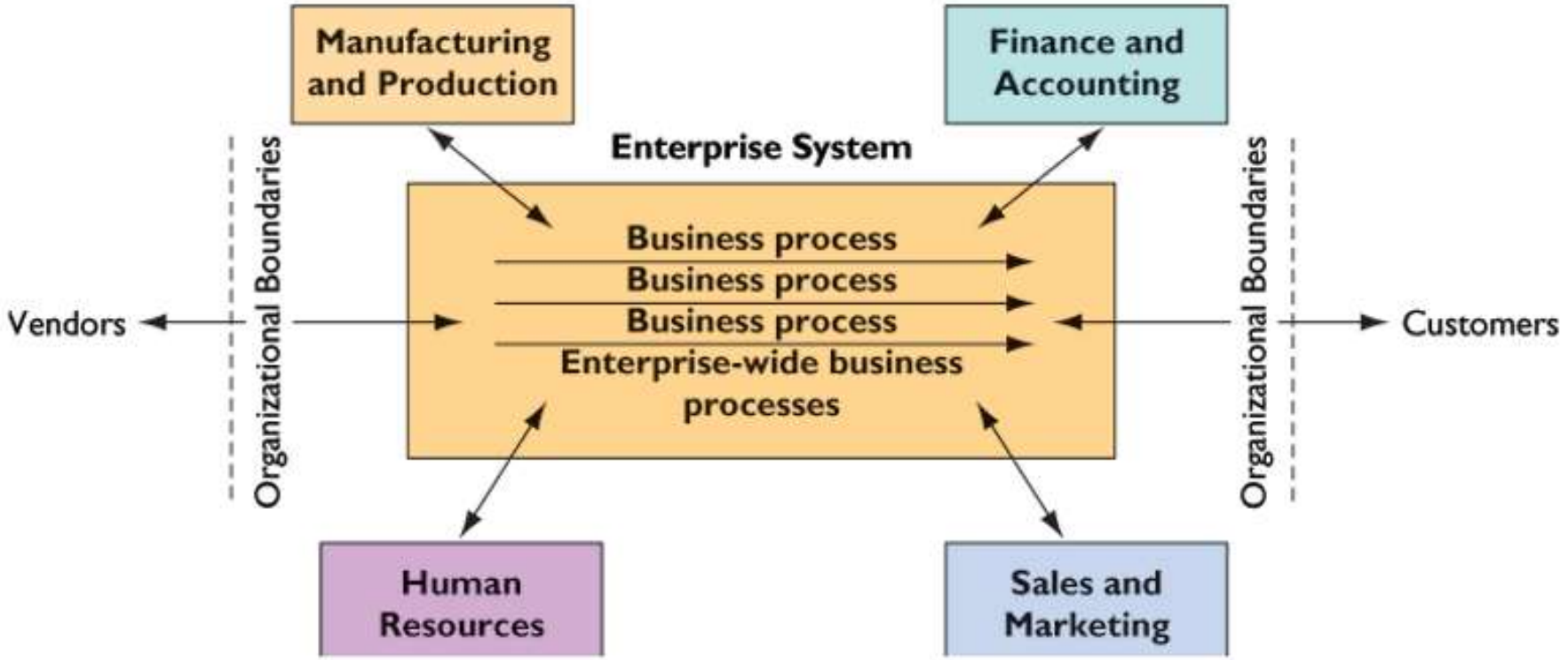
Enterprise Applications



Enterprise Applications

- Enterprise resource planning (ERP)
- Provides single information system for organization-wide coordination and integration of key business processes
- Models and automates many business processes

Enterprise Applications



Enterprise Applications

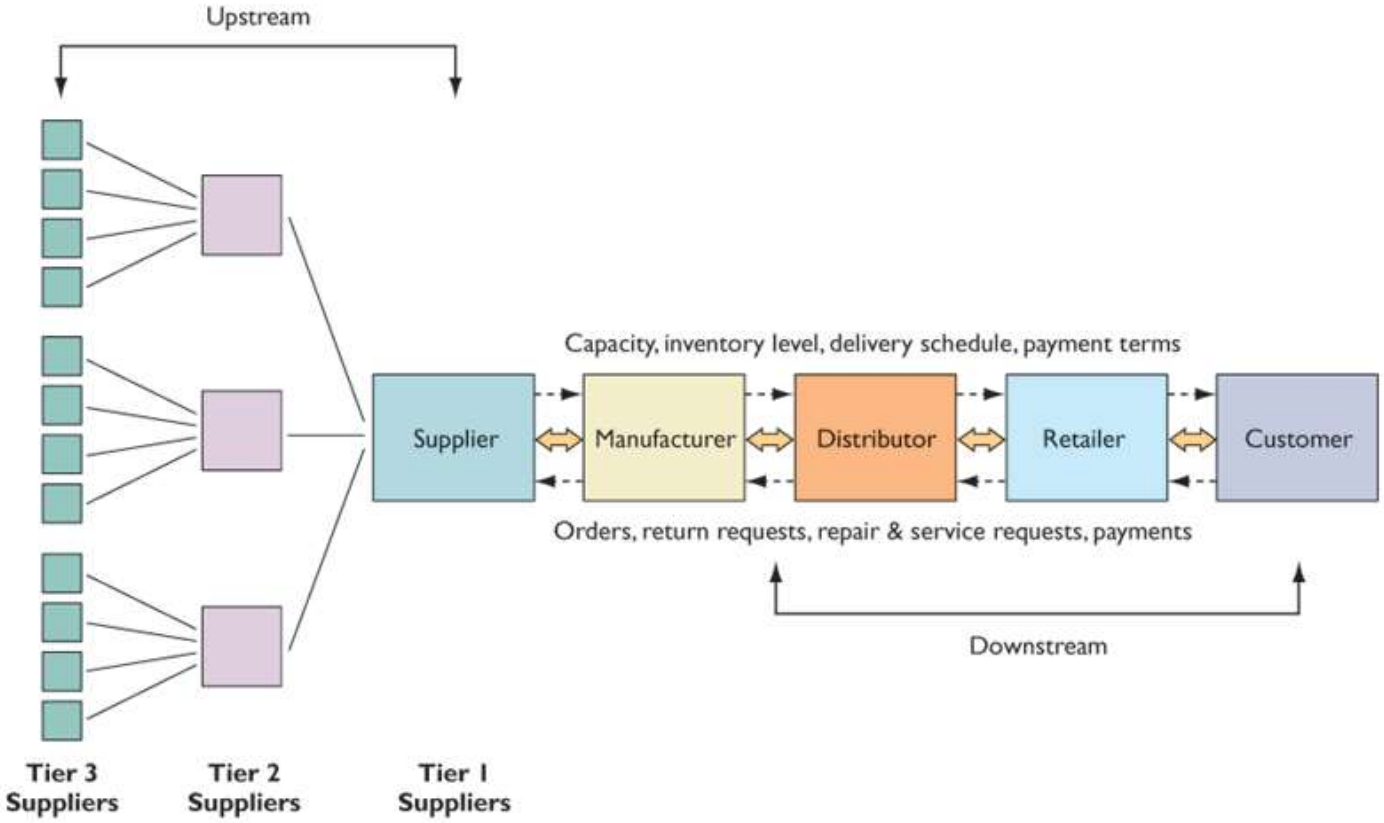
- Supply Chain Management Systems (SCM): Automate flow of information between firm and suppliers to optimize production and delivery

- Supply Chain Management: Close linkage of activities involved in buying, making, moving a product

- Supply Chain: Network of organizations and business processes for production and distribution of products

Enterprise Applications

A supply chain



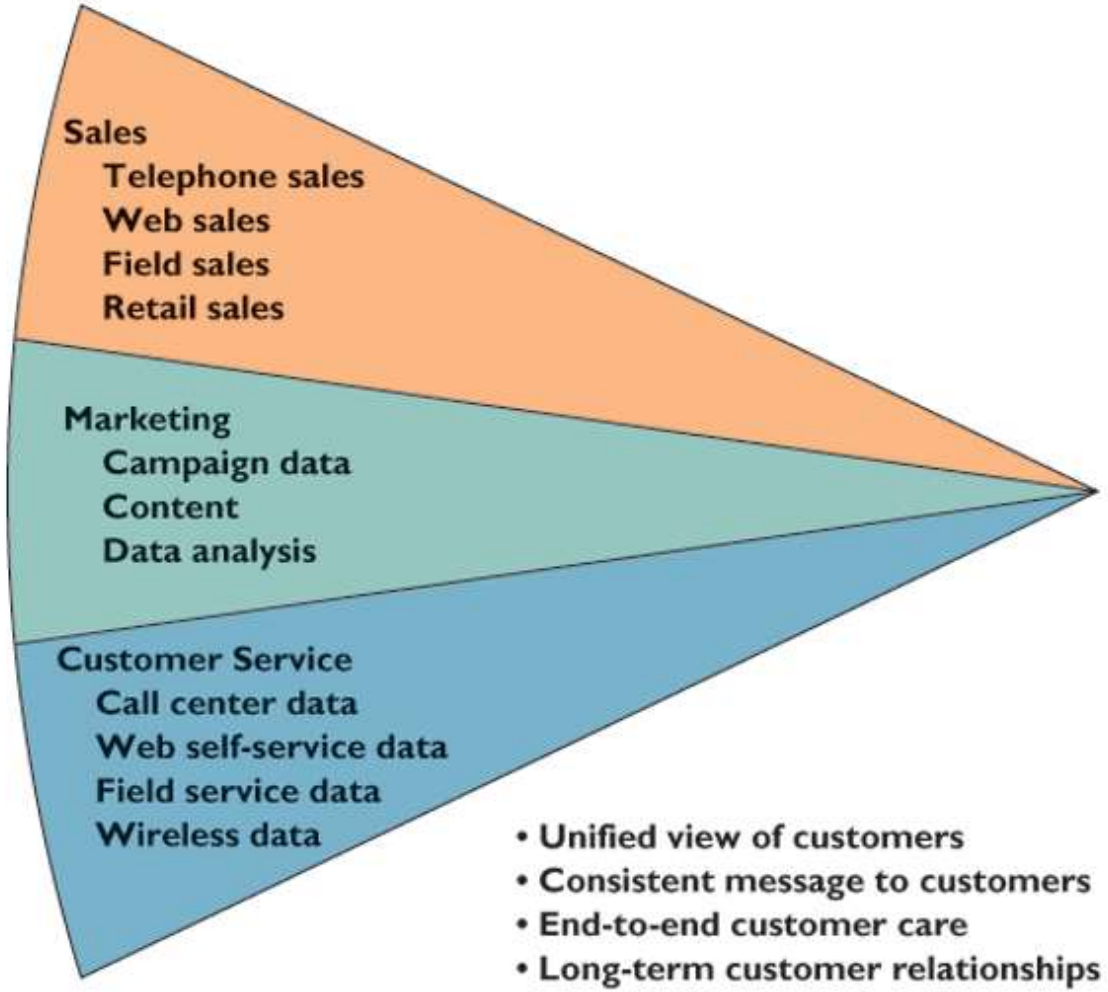
Information Systems Can Help Supply Chain Participants

- Decide when and what to produce, store, and move
- Rapidly communicate orders
- Track status of orders
- Check and monitor inventory
- Reduce inventory, transportation, warehousing costs
- Track shipments
- Plan production based on actual customer demand
- Rapidly communicate changes in product design

Customer Relationship Management (CRM)

- Manages ways used to deal with existing and potential customers
- Uses information systems to coordinate all customer interaction processes in sales, marketing, and service.
- Track all customer interactions
- Analyze data to optimize revenue, profitability, customer satisfaction, customer retention

Customer Relationship Management (CRM)



Knowledge Management Systems (KMS)

- Collect relevant knowledge and experience in firm to support business processes and management decisions
- Manage and distribute documents and other digital knowledge objects

Role of Knowledge Management Systems

- Acquire knowledge
- Store knowledge
- Distribute knowledge
- Apply knowledge

Strategic View of Information Systems

- Information systems are vital competitive networks. IT can change the way businesses compete.
- Information systems are a means of organizational renewal.
- IS are a necessary investment in technologies that help a company adopt strategies and business processes that enable it to reengineer or reinvent itself in order to survive and succeed in today's dynamic business environment.

Competitive Strategies

- Cost Leadership
- Differentiation
- Innovation
- Growth
- Alliance

Cost Leadership Strategy

- Becoming a low-cost producer of products and services
- Finding ways to help suppliers and customers reduce their costs
- Increase costs of competitors

Differentiation Strategy

- Developing ways to differentiate a firm's products and services from its competitors'

- Reduce the differentiation advantages of competitors

Innovation Strategy

- Development of unique products and services
- Entry into unique markets or market niches
- Making radical changes to the business processes for producing or distributing products and services that are so different from the way a business has been conducted that they alter the fundamental structure of an industry

Growth Strategy

- Significantly expanding a company's capacity to produce goods and services
- Expanding into global markets
- Diversifying into new products and services
- Integrating into related products and services

Alliance Strategy

- Establishing new business linkages and alliances with customers, suppliers, competitors, consultants, and other companies

Competitive Strategy Examples

Strategy	Company	Strategic Use of Information Technology	Business Benefit
Cost Leadership	Dell Computer	Online build to order	Lowest cost producer
	Priceline.com	Online seller bidding	Buyer-set pricing
	eBay.com	Online auctions	Auction-set prices
Differentiation	AVNET Marshall	Customer/supplier e-commerce	Increase in market share
	Moen Inc.	Online customer design	Increase in market share
	Consolidated Freightways	Customer online shipment tracking	Increase in market share
Innovation	Charles Schwab & Co.	Online discount stock trading	Market leadership
	Federal Express	Online package tracking and flight management	Market leadership
	Amazon.com	Online full-service customer systems	Market leadership
Growth	Citicorp	Global intranet	Increase in global market
	Wal-Mart	Merchandise ordering by global satellite network	Market leadership
	Toys 'Я' Us Inc.	POS inventory tracking	Market leadership
Alliance	Wal-Mart/Procter & Gamble	Automatic inventory replenishment by supplier	Reduced inventory cost/increased sales
	Cisco Systems	Virtual manufacturing alliances	Agile market leadership
	Staples Inc. and Partners	Online one-stop shopping with partners	Increase in market share

In Class Exercise 1

- Explain the difference between “data” and “information” by giving an example.
- What is the purpose(s) of using IS in business?
- Give an example of an IS application, indicate the functionality and organizational level of the system.